Claims:

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1. An apparatus for detecting a moving object in a sequence of color frame images, said color frame image having a plurality of pixels, each pixel having three color components, comprising:

a color normalizer for normalizing color components of the color frame image to produce a normalized color frame image;

a color transformer coupled to the color normalizer for color transforming the normalized color frame image to a first color transformed frame image, said first color transformed frame image having intensity levels such that pixels corresponding to said moving object are emphasized;

a frame delay coupled to the color transformer for delaying the first color transformed frame image by one frame, said delayed first color transformed frame image being a second color transformed frame image; and

a motion detector coupled to the color transformer and the frame delay for detecting the motion of the moving object and further intensifying the intensity levels of said first color transformed frame image based on the detected motion.

2. The apparatus of Claim 1, wherein each pixel of the first color transformed frame image has an intensity level which is proportional to the proximity of the normalized color components of the pixel to the normalized color components of said moving object.

3. The apparatus of Claim 2, wherein the intensity level of said each pixel of the first color transformed frame image and the normalized color components of the pixel have a relationship as follows:

$$f : R^2 \rightarrow R^1$$

$$Z(x, y) = GF(r(x, y), g(x, y)) \qquad (x, y) \in I$$

wherein (x, y) is a coordinate of said pixel in the normalized frame image, r(x, y) and g(x, y) are normalized color components of the pixel at the coordinate (x, y), and GF( ) is a 2-dimensional Gaussian distribution function.

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4. The apparatus of Claim 1, wherein said motion detector comprises means for detecting the motion of each pixel by counting pixels adjacent said each pixel whose intensity level differences between said first and second color transformed frame images are larger than a threshold value, and

wherein, said intensity level of each pixel are further intensified by weighting said intensity level in accordance with said detected motion of said each pixel.

5. The apparatus of Claim 4, wherein said weighting is performed by fuzzy-AND operating said intensity level with said detected motion for said each pixel.

6. The apparatus of Claim 4, wherein said threshold value is obtained by using a Sigmoid function as follows:

$$Th(Z) = \frac{255}{1+e^{\frac{Z(x,y,t)-255/2}{Q}}}$$

wherein Z(x, y, t) is the intensity level of a pixel and Q is a predetermined parameter.

7. A method of detecting a moving object in a sequence of color frame images, said color frame image having a plurality of pixels, each pixel having three color components, comprising steps of:

normalizing color components of the color frame image to produce a normalized frame image;

color transforming the normalized frame image to a first color transformed frame image, said first color transformed frame image having intensity levels such that pixels corresponding to said moving object are emphasized;

delaying the first color transformed frame image by one frame, said delayed first color transformed frame image being a second color transformed frame image; and

detecting the motion of the moving object and further intensifying the

intensity levels of said first color transformed frame image based on the detected motion.

8. The method of Claim 7, wherein each pixel of the first color transformed frame image has an intensity level which is proportional to the proximity of the normalized color components of the pixel to the normalized color components of said moving object.

9. The method of Claim 8, wherein the intensity level of said each pixel of the first color transformed frame image and the normalized color components of the pixel have a relationship as follows:

$$f: R^2 \to R^1$$
$$Z(x, y) = GF(r(x, y), g(x, y)) \qquad (x, y) \in I$$

wherein (x, y) is a coordinate of said pixel in the normalized frame image, r(x, y) and g(x, y) are normalized color components of the pixel at the coordinate (x, y), and GF( ) is a 2-dimensional Gaussian distribution function.

10. The method of Claim 7, wherein said motion detecting step comprises a step of detecting the motion of each pixel by counting pixels adjacent said each pixel whose intensity level differences between said first and second color transformed frame images are larger than a threshold value, and

wherein said intensity level of each pixel is further intensified by weighting said intensity level in accordance with said detected motion of said each pixel.

11. The method of Claim 10, wherein said weighting is performed by fuzzy-AND operating said intensity level with said detected motion of said each pixel.

12. The method of Claim 10, wherein said threshold value is obtained by using a Sigmoid function as follows:

$$Th(Z) = \frac{255}{1+e^{\frac{Z(x,y,c)-255/2}{Q}}}$$

wherein $Z(x, y, t)$ is the intensity level of a pixel and $Q$ is a predetermined parameter.